

Section 8 – Attachments

Emission Inventories

Section 51.1008 of 40 CFR Part 51 requires an emissions inventory for base and projected attainment years for any PM_{2.5} NAA. This was completed as part of the SIP submitted for the 2012 PM_{2.5} standard. Pollutants inventoried for the Allegheny County PM_{2.5} NAA include primary (direct) PM_{2.5} along with precursors SO₂, NO_x, VOC, and NH₃. PM₁₀ is also inventoried.

The emissions inventories were compiled for all major and some minor sources within Allegheny County. Sources in the emissions inventories include stationary point sources, area sources, nonroad mobile sources, and onroad mobile sources. Fire and biogenic emissions are also included in the inventory. All emissions used for the emissions inventories for Allegheny County match those used in the modeling demonstration.

The year 2011 was used for base case emissions inventory, projected to a future case attainment year of 2021. Local projections were focused on PM_{2.5} and precursor reductions from stationary point source emissions, while regional projections were based on reductions from all sectors as incorporated into the MARAMA inventories. Emissions are given in actual values based on pollutant emission factors and throughputs or capacities of each emission source.

Source categories used for the emissions inventories are described below. The inventory listings by process are included in Appendix D (Emissions Inventories) of the Allegheny county Portion of the Pennsylvania SIP for PM-2.5 2012 standards, submitted to EPA by the state on September 30, 2019 (“2019 SIP”), including a summary of specific local source revisions and projections.

- Stationary point (“point”) sources are industrial or commercial sources for which ACHD collects individual annual emissions-related information. These include major and minor sources with the potential to emit 25 tons/year or more of any criteria pollutant. Actual emissions are submitted annually by each source and reviewed by ACHD for accuracy. Emissions values are based on fuel use, stack test, or emission factors available.
- Area (or “nonpoint”) sources are industrial, commercial, and residential sources that are too small or too numerous to be inventoried individually. Examples include commercial and residential fuel combustion, solvent utilization, on-shore oil and gas production, agricultural activity, and other sources. Commercial diesel marine vessels and railroad locomotives have also been included in the area source inventory. Pennsylvania Department of Environmental Protection staff develop these inventories based on population and other surrogate factors.

- Nonroad mobile (or “nonroad”) sources encompass a diverse collection of off-highway engines, including (but not limited to) outdoor power equipment, recreational vehicles, farm and construction machinery, industrial equipment, and other sources.
- Onroad mobile (or “onroad”) sources include passenger cars, light-duty trucks, heavy-duty trucks, buses, and motorcycles. The Motor Vehicle Emissions Simulator (MOVES) model was utilized to generate emissions based on traffic counts, vehicle speeds, vehicle population growth, and other factors.
- Fire and biogenic emissions are included in the inventories as additional sources. Fire emissions from inadvertent (wildfire) or intentional (prescribed) biomass burning are as estimated by EPA’s FIRES inventory. Biogenic (non-anthropogenic) emissions from vegetation and soils are estimated by the Biogenic Emission Inventory System (BEIS) model. These emissions are held constant from base case to future case. (In Appendix D.3 (Area Sources), fire and biogenic emissions are included at the end of the area source inventories.)

Emissions inventory summaries for base and future projected cases are shown in Tables 4-1 and 4-2¹ of the 2019 SIP by sector for Allegheny County.

Table 4-1. Base Case 2011 Emissions by Sector (tons/year)

Allegheny County (2011)	PM_{2.5}	PM_{2.5} (filt)	PM_{2.5} (cond)	PM₁₀	SO₂	NO_x	VOC	NH₃
Point Sources	2,503	1,338	1,164	2,987	13,460	11,128	1,669	207
Area Sources	2,491	2,011	480	4,683	1,528	6,979	11,200	621
Nonroad Mobile Sources	361	361	0	378	11	3,921	3,780	5
Onroad Mobile Sources	450	450	0	984	78	13,259	7,383	304
Fires	24	24	0	29	2	5	64	4
Biogenics	0	0	0	0	0	166	5,876	0
Total	5,829	4,185	1,644	9,061	15,080	35,460	29,972	1,141

Table 4-2. Future Case Projected 2021 Emissions by Sector (tons/year)

Allegheny County (2021)	PM_{2.5}	PM_{2.5} (filt)	PM_{2.5} (cond)	PM₁₀	SO₂	NO_x	VOC	NH₃
Point Sources	2,256	1,256	999	2,722	5,921	7,928	1,534	202

¹ Note: Due to the rounding to whole tons, the sum of the sectors in Tables 4-1 and 4-2 may not add up to the totals. Detailed emissions by process/category in Appendix D (Emissions Inventories) are given in thousandths of a ton (three decimal places).

Area Sources	2,708	2,226	472	5,486	1,079	6,664	10,221	615
Nonroad Mobile Sources	234	234	0	248	5	2,212	2,752	6
Onroad Mobile Sources	266	266	0	722	31	5,708	3,479	209
Fires	24	24	0	29	2	5	64	4
Biogenics	0	0	0	0	0	166	5,876	0
Total	5,488	4,007	1,471	9,207	7,039	22,684	23,926	1,037

Note: For the emissions inventories in Tables 4-1 and 4-2 and in Appendix D (Emissions Inventories), primary PM_{2.5} emissions are also separated into filterable and condensable fractions for point and area sources. If not reported as individual fractions, PM_{2.5} emissions are assumed to be composed of filterable component only, with the condensable component equal to zero. For concentrations, total PM_{2.5} (and PM₁₀) includes both primary (released into the air as a particle) and secondary (chemically transformed from precursors) components.

Additionally, PM₁₀ by definition includes all PM_{2.5} plus PM_{coarse} (particles greater than 2.5 µm in diameter but less than or equal to 10 µm). The condensable component of particulate matter is considered to exist entirely in the 2.5 µm fraction.

Looking at emissions from all sectors, Figure 4-2 shows a pie chart of the percentages of total PM_{2.5} and precursor emissions by sector in Allegheny County for 2011.

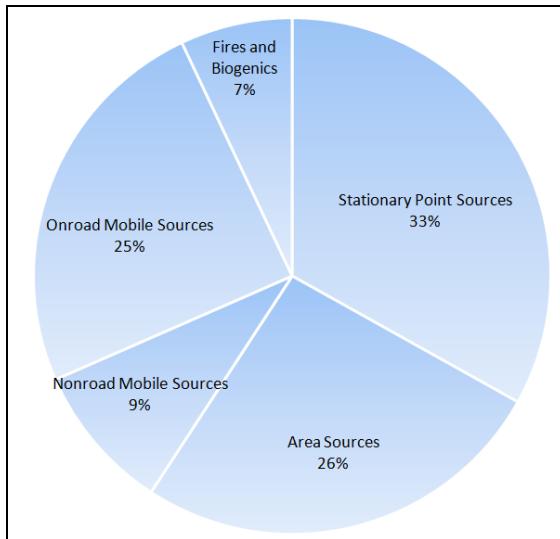


Figure 4-1. Allegheny County Total PM_{2.5} and Precursor Emissions, Percentages by Sector, 2011

Figure 4-2 shows that while point sources are the largest overall contributors of PM_{2.5} and precursors (33%), other sectors such as area and onroad mobile sources are also considerable contributors. Overall emissions from all sectors were reduced by 27,308 tons/year of PM_{2.5} and precursors from 2011 to 2021 in Allegheny County in this demonstration.

Section 8 – Attachments (continued)

Emission Reduction Calculations

Project (1) City of Pittsburgh CNG fueled waste haulers

Diesel Emission Quantifier emission reductions results for Project (1)



Diesel Emission
Quantifier emission re



Diesel Emission Quantifier Inputs

Diesel Emission
Quantifier Inputs for F

Project (2) Allegheny County Parks Department propane and clean diesel-powered equipment

Summary of Emission Reduction Results for Project (2)



Project 2. Allegheny
County PM2.5 reducti

Diesel Emission Quantifier Inputs for Project



Project 2. County
Public Works.Group E



Project 2. County
Public Works.Group F.



Project 2. County
Public Works.Group C

Diesel Emission Quantifier Emission Reductions



Project 2. County
Public Works.Group E



Project 2. County
Public Works.Group F.



Project 2. County
Public Works.Group C

Project (4) Port Authority Battery Electric Buses

Diesel Emission Quantifier Inputs



Project 4 PAT Battery
Electric Buses.DEQ inp

Diesel Emission Quantifier Emission Reductions



Project 4 PAT Battery
Electric Buses.DEQ err

Section 8 – Attachments (continued)

Partnership Letters

In support of Project (4) Port Authority Battery Electric Buses

U.S. Senator Robert Casey support letter.

Note: The Senator addressed the letter to EPA and asked to be kept informed of the status of the grant application.



03092020 Casey
letter to EPA Alleghen

U.S. Congressmen Doyle and Lamb support letter



Reps Doyle & Lamb
Support Letter to EPA

Allegheny County Chief Executive Richard Fitzgerald support letter



Support Letter_Health
Targeted Airshed Pro

Southwest Pennsylvania Commission support Letter



SPC Letter of Support
2020 EPA Targeted Ai

Duquesne Light Company support letter



DLC Letter of
Support - EPA Target

Section 8 – Attachments (continued)

Biographical Sketches

Dr. Debra Bogen, M.D.,

Director, Allegheny County Health Department

Dr. Bogen was appointed Director of the Allegheny County Health Department in 2020. The Health Director serves as Secretary to the Allegheny County Board of Health and is the highest-ranking official in the Health Department, responsible for overseeing all its programs and activities.

The Vice Chair for Education in the Department of Pediatrics with UPMC Children's Hospital of Pittsburgh, Dr. Bogen earned her medical degree from the University of Colorado School of Medicine and completed post-graduate work at Johns Hopkins University. She is a Professor of Pediatrics, with secondary appointments in Psychiatry and in Clinical and Translational Science.

Jayne Graham

Manager, ACHD Air Quality Program

As the Manager of the Allegheny County Health Department's Air Quality Program, Ms. Graham is responsible for overseeing all its programs and activities including permitting, enforcement, monitoring and regulatory planning/development and data analysis. Ms. Graham joined the ACHD in 1982 as an Air Pollution Control Engineer and was Section Head of Planning before being appointed Manager of the Program in 2014. Ms. Graham received her B.S. in Chemical Engineering from the University of Pittsburgh. She has held numerous positions in the Air & Waste Management Association.

Sandra Etzel

Manager, Planning & Data Analysis, ACHD Air Quality Program

Ms. Etzel has responsibility for development of the State Implementation Plan for the Allegheny County PM2.5 Non-Attainment Area, and as such, has extensive and in-depth knowledge of the technical and regulatory matters associated with reaching attainment for the Allegheny County PM2.5 Targeted Air Shed. Ms. Etzel received a B.S. in Biology from Dickinson College and a B.S. and M.S. in Electrical Engineering from the University of Pittsburgh.

Jason Maranche

Air Pollution Control Engineer III, ACHD Air Quality Program

Mr. Maranche conducted the detailed modeling required for the development of the State Implementation Plan for the Allegheny County and Liberty Clairton PM2.5 Non-Attainment Areas, and as such, has extensive and in-depth knowledge of the technical and regulatory matters associated with reaching attainment for the Allegheny County PM2.5 Targeted Air Shed.

Mr. Maranche received a BS in Chemical Engineering from the Pennsylvania State University.

Thomas Lattner

Air Pollution Control Engineer III, ACHD Air Quality Program

Mr. Lattner is responsible for regulatory development and various diesel emission-reducing retrofit/repower/replacement projects funded federally and through local sources. Mr. Lattner has coordinated several diesel and woodstove exchange projects funded by federal grant awards. Mr. Lattner received a BS in Chemical Engineering from the University of Pittsburgh.

Kim Joyce

Fiscal Manager ACHD Finance - in kind

Ms. Kim Joyce is the fiscal manager at the Allegheny County Health Department. She will oversee all fiscal issues related to this project including contract development and appropriate grants management. Ms. Joyce received a BS in Accounting from Robert Morris University as well as an MBA from Point Park University.

Keith Horner

Grants Manger ACHD Finance

Grants Manager ACHD in kind

Mr. Keith Horner, grants manager at the Allegheny County Health Department will oversee and assure that all grant financial reporting and deliverables are completed in an accurate and timely manner in accordance with grant requirements.

Mr. Horning received a BS from Washington and Jefferson College.

Fiscal Officer TBD 1. FTE (TBA)

This individual will report to Keith Horner and be responsible for all fiscal issues related to the project.

He/she will create reports for grant funding and monitor expenditures. She/he will also coordinate efforts with the program to ensure accurate accounting work as well as timely payments per contract.

Job Description: Contract Administration (TBA): 1FTE

This position will be responsible for working on all contracts, including supporting the development of all contracts and contract management with partners. This individual will report to Kim Joyce.

Section 8 – Attachments (continued)

Quality Assurance Narrative Statement

ACHD-AQP Quality Policy

It is the policy of ACHD-AQP that all environmental data operations result in the collection of environmental data of known and documented quality, suitable for its intended use. This policy is implemented by ensuring that for all data production efforts, adequate QA procedures are employed throughout the entire process from studying the design of the process through data usage.

Specifically, it is the policy of ACHD-AQP that:

- Each air quality activity that is responsible for the characterization of environmental systems and the health of human populations; or the direct measurement of environmental conditions or releases; or the use of environmental data collected from other sources will be part of an effective quality system. The quality system is documented in the ACHD Quality Management Plan.
- The objectives for generating any new environmental data should be determined prior to data collection and control methods can be applied to ensure a level of data quality commensurate with the intended use(s) for the data. These objectives will be documented in the project's Quality Assurance Project Plan (QAPP).
- Prior to the use of environmental data collected from other sources, such as literature, industry surveys, databases or computerized models, the data should be evaluated to ensure a level of data quality that is commensurate with the intended use(s) of the data.
- Any program or activity that generates environmental data shall develop and implement a QAPP and/or Standard Operating Procedures (SOPs) which specify the detailed procedures required to assure production of data of known quality and sufficient quantity to support environmental decisions.